

**STRUCTURAL EQUATION MODELING OF SELF-
ESTEEM, MOTIVES OF PARTICIPATING IN
PHYSICAL ACTIVITY AND DURATION OF PHYSICAL
ACTIVITY AMONG ADOLESCENTS IN KOTA BHARU,
KELANTAN**

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UNIVERSITI SAINS MALAYSIA

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by

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**Thesis submitted in fulfilment of the requirements
for the degree of
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Introduction: Physical activity (PA) is an important daily routine that can maintain our health, whereas engaging in sedentary lifestyle can cause lifestyle-related diseases. There is no age limit of being active, but it is important to start from early age. Motivation of participating in PA is important to motivate people to sustain their PA regularly. Self-esteem could be a trigger factor to motivate people to increase the duration of PA. This study attempted to uncover how much self-esteem, motives of participating in any PA, and the duration of PA are related among adolescents, specifically in secondary school students in Kota Bharu, Kelantan.

Objectives: The study aimed to assess the level of self-esteem and motives of participating in PA and to ensure that both constructs are reliable and valid measures. Then, the inter-relationships between self-esteem, motives of participating in PA and duration of PA were examined using structural equation modeling (SEM).

Methods: A cross-sectional study was conducted among secondary schools' students in Kota Bharu, Kelantan using self-administered questionnaire. Participants were selected using cluster sampling method. Three schools were randomly selected from a total of 48 schools in Kota Bharu, Kelantan. The classes that involved in the study, within the selected schools were determined by the schools' principal. Self-esteem was measured using State Self-esteem Scale (SSES) and motives of participating in PA were measured using Physical Activity Leisure Motivation Scale (PALMS-Y). The scales were translated into Malay language using the standard procedure and there were named as SSES-M and PALMS-Y-M. Descriptive, confirmatory factor analysis (CFA), and SEM were used in statistical analysis.

Results: Participants were 783 secondary school students (female= 57.3%, male= 42.7%) from Kota Bharu, Kelantan. Majority of the students were Malay (57.3%). Overall, the average of self-esteem and motives of participating in PA were 2.92 (SD=0.64) and 3.75 (SD=0.71) respectively. For measurement model assessment, SSES-M scale showed good fit to the data after some improvement were made (CFI=0.966, TLI=0.949, SRMR=0.030, RMSEA=0.040 (0.026, 0.055), Clfit p-value=0.861) with nine items remained. For PALMS-Y-M, the majority of the fit indices were within the acceptable threshold values (CFI=0.928, TLI=0.917, SRMR=0.048, RMSEA= 0.045 (0.042, 0.049), Clfit p-value= 0.982) with all items remained. The composite reliability for SSES-M and PALMS-Y-M were ranged from 0.582-0.632 and 0.622-0.823 respectively. Overall, the final SEM model showed a good fit to the data based on several fit indices (CFI=0.919, TLI=0.908, SRMR=0.048, RMSEA=0.044 (0.040, 0.047), Clfit p-value=0.998) with five hypotheses supported. The final SEM model explained 25% of the total variance in duration of PA, which was statistically significant.

Conclusions: The SEM model tested in the present study provided useful insight in regard to the direct and indirect relationships among the study variables. The finding from the present study could provide valuable information that could help the teachers, health educators, health policy makers, and parents in promoting exercise and physical activity among secondary school students.

Dr Kueh Yee Cheng : Main supervisor

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LIST OF ABBREVIATIONS

AVE	- Average variance extracted
AFF	- Affiliation
APP	- Appearance
CFA	- Confirmatory factor analysis
CFI	- Comparative fit index
CI	- Confidence interval
COM	- Competition
CR	- Composite reliability
D	- Mahalanobis distance
Dur	- Duration
ENJ	- Enjoyment
JFS	- Janis-Field Feelings of Inadequacy Scale
GFI	- Goodness of fit index
GOF	- Goodness-of-fit
H	- Hypothesis
KMO	- Kaiser-Mayer olkin modification indices
MAS	- Mastery
M.I	- Modification indices
ML	- Maximum likelihood
MLM	- Robust maximum likelihood estimator for non-missing data
MLR	- Robust maximum likelihood estimator for missing data
MPER	- Mean Performance

MSOC	- Mean Social
PA	- Physical activity
PALMS	- Physical activity leisure motivation scale
PALMS-Y	- Physical activity leisure motivation scale for youth
PALMS-Y-M	Physical activity leisure motivation scale for youth Malay version
PHY	- Physical
PSY	Psychological
REMM	- Recreational exercise motivation measure
RMSEA	- Root mean square of approximation
RSE	- Rosenberg's self-esteem scale
q	- Number of free parameter to be estimate
RMSEA	- Root mean square error of approximation
SBP	- Systolic blood pressure
SD	- Standard deviation
SSES	- State self-esteem scale
SSES-M	- State self-esteem scale Malay version
SRMR	- Standardized root mean square residual
SEM	- Structural equation modeling
TLI	- Tucker- Lewis index
USM	- Universiti Sains Malaysia
WHO	- World Health Organization

LIST OF SYMBOLS

χ^2	-	Chi square
df	-	Degree of freedom
p-value/p	-	Probability value
N	-	Sample size
%	-	Percentage
α	-	Cronbach alpha
β	-	Path coefficient/ parameter estimate
TR_d	-	Scaled difference MLR chi-square test
T_0	-	Chi square for the H_0 model
T_1	-	Chi square for the H_1 model
C_d	-	scaling difference
d_0	-	degree of freedom for the H_0 model
c_0	-	scaling correction factor for the H_0 model
d_1	-	degree of freedom for the H_1 model
c_1	-	scaling correction factor for the H_1 model
H_1	-	the final model
H_0	-	restricted final model.

ABSTRACT

Introduction: Physical activity (PA) is an important daily routine that can maintain our health, whereas engaging in sedentary lifestyle can cause lifestyle-related diseases. There is no age limit of being active, but it is important to start from early age. Motivation of participating in PA is important to motivate people to sustain their PA regularly. Self-esteem could be a trigger factor to motivate people to increase the duration of PA. This study attempted to uncover how much self-esteem, motives of participating in any PA, and the duration of PA are related among adolescents, specifically in secondary school students in Kota Bharu, Kelantan. **Objective:** The study aimed to assess the level of self-esteem and motives of participating in PA and to ensure that both constructs are reliable and valid measures. Then, the inter-relationships between self-esteem, motives of participating in PA and duration of PA were examined using structural equation modeling (SEM). **Method:** A cross-sectional study was conducted among secondary schools' students in Kota Bharu, Kelantan using self-administered questionnaire. Participants were selected using cluster sampling method. Three schools were randomly selected from a total of 48 schools in Kota Bharu, Kelantan. The classes that involved in the study, within the selected schools were determined by the schools' principal. Self-esteem was measured using State Self-esteem Scale (SSES) and motives of participating in PA were measured using Physical Activity Leisure Motivation Scale (PALMS-Y). The scales were translated into Malay language using the standard procedure and there were named as SSES-M and PALMS-Y-M. Descriptive, confirmatory factor analysis (CFA), and SEM were used in statistical analysis. **Results:** Participants were 783 secondary school students (female= 57.3%, male= 42.7%) from Kota Bharu, Kelantan. Majority of the students were Malay (57.3%). Overall, the

average of self-esteem and motives of participating in PA were 2.92 (SD=0.64) and 3.75 (SD=0.71) respectively. For measurement model assessment, SSES-M scale showed good fit to the data after some improvement were made (CFI=0.966, TLI=0.949, SRMR=0.030, RMSEA=0.040 (0.026, 0.055), Clfit p-value=0.861) with nine items remained. For PALMS-Y-M, the majority of the fit indices were within the acceptable threshold values (CFI=0.928, TLI=0.917, SRMR=0.048, RMSEA= 0.045 (0.042, 0.049), Clfit p-value=0.982) with all items remained. The composite reliability for SSES-M and PALMS-Y-M were ranged from 0.582-0.632 and 0.622-0.823 respectively. Overall, the final SEM model showed a good fit to the data based on several fit indices (CFI=0.919, TLI=0.908, SRMR=0.048, RMSEA=0.044 (0.040, 0.047), Clfit p-value=0.998) with five hypotheses supported. The final SEM model explained 25% of the total variance in duration of PA, which was statistically significant. **Conclusion:** The SEM model tested in the present study provided useful insight in regard to the direct and indirect relationships among the study variables. The finding from the present study could provide valuable information that could help the teachers, health educators, health policy makers, and parents in promoting exercise and physical activity among secondary school students.

ABSTRAK

Pengenalan: Aktiviti fizikal (PA) merupakan rutin yang penting untuk mengekalkan tahap kesihatan kita, dimana penglibatan diri dalam cara hidup tidak aktif boleh menyebabkan penyakit yang berkait dengan corak kehidupan. Tiada had umur untuk menjadi aktif, akan tetapi adalah amat penting untuk bermula dari awal lagi. Motivasi menyertai aktiviti fizikal adalah penting untuk mengekalkan tahap aktiviti fizikal (PA) mereka secara konsisten. Kemandirian diri boleh menjadi faktor pemangkin untuk memotivasikan orang ramai untuk meningkatkan masa untuk bergiat dalam aktiviti fizikal (PA). Kajian ini cuba untuk merungkai sejauhmana perkaitan antara tahap kemandirian diri, motivasi bergiat dalam mana-mana aktiviti fizikal dan tempoh masa aktiviti fizikal (PA) di kalangan remaja di Kota Bharu, Kelantan. **Objektif:** Kajian ini bertujuan untuk mengkaji sejauhmana tahap kemandirian diri dan motivasi untuk bergiat dalam aktiviti fizikal dan juga memastikan kedua-dua konstruk adalah sah dan boleh dipercayai. Kemudian, hubungan diantara kemandirian diri, motif kepada aktiviti fizikal (PA) dan tempoh masa penglibatan dengan aktiviti fizikal dikaji menggunakan model persamaan berstruktur. **Kaedah:** Kajian secara keratan rentas telah dijalankan di kalangan pelajar sekolah menengah di Kota Bharu, Kelantan menggunakan kertas soal-selidik. Sampel dipilih menggunakan kaedah persampelan berkluster. Tiga daripada kesuluruhan 48 buah sekolah menengah yang ada di Kota Bharu, Kelantan telah dipilih secara rawak. Kelas-kelas yang terlibat dengan kajian ini dalam kalangan sekolah yang dipilih adalah ditentukan oleh pengetua sekolah. Kemandirian diri diukur dengan menggunakan “State self-esteem” (SSES) dan motif aktiviti fizikal diukur menggunakan “Physical Activity Leisure Motivation Scale” (PALMS-Y). Skala-skala itu dialih bahasa ke bahasa Melayu menggunakan prosuder yang standard dan dinamakan SSES-M dan PALMS-Y-M. Deskriptif, pengesahan faktor, dan

model persamaan struktur digunakan dalam analisis statistik. **Keputusan:** Seramai 783 pelajar sekolah menengah (perempuan=57.3%, lelaki=42.7%) dari Kota Bharu, Kelantan menyertai kajian ini. Majoriti pelajar berbangsa Melayu (57.3%). Secara keseluruhan, purata kemandirian diri dan motif aktiviti fizikal adalah masing-masing 3.098(SD=0.42) and 3.77(SD=0.55). Untuk kajian model, SSES-M model adalah berpadanan dengan data sampel setelah pembaikan dilakukan (CFI=0.966, TLI=0.949, SRMR=0.030, RMSEA=0.040 (0.026, 0.055), Clfit p-value=0.861). Untuk PALMS-Y-M, majoriti “fit indices” adalah dalam tahap yang boleh diterima (CFI=0.928, TLI=0.917, SRMR=0.048, RMSEA= 0.045 (0.042, 0.049), Clfit p-value= 0.982) dimana semua soalan masih kekal. Kebolehpercayaan konstruk untuk SSES-M dan PALMS-Y-M adalah masing-masing dalam lingkungan 0.582-0.632 dan 0.622-0.823. Secara keseluruhan, model SEM akhir menunjukkan ia adalah berpadanan dengan data sampel kajian berdasarkan beberapa “fit indices” (CFI=0.919, TLI=0.908, SRMR=0.048, RMSEA=0.044 (0.040, 0.047), Clfit p-value=0.998) dengan lima hipotesis yang disokong. Model akhir SEM menjelaskan 25% keseluruhan varians tempoh masa bergiat dalam aktiviti fizikal yang signifikan.

Kesimpulan: Model SEM yang digunakan dalam kajian ini menyediakan pendedahan berguna tentang kaitan secara terus atau tidak terus di antara perkara yang dikaji. Kajian ini boleh memberikan maklumat berguna yang boleh membantu guru, pengajar kesihatan, pembuat polisi kesihatan dan ibu bapa dalam mempromosikan senaman dan aktiviti fizikal di kalangan pelajar sekolah menengah di Kota Bharu, Kelantan.

CHAPTER 1:

INTRODUCTION

1.1 Overview and background of the study

Youth nowadays are suffered many kinds of health-problem. This is because they engaged in unhealthy lifestyle, the unbeneficial way of daily routines that contributing to the growing number of lifestyle-related diseases. They prefer to play games in closed rooms than enjoying a light walk around the park even for a few minutes. Numerous case studies showed that physical inactivity is dangerous to our health. A release from World Health Organization (2002) on 4 April 2002 mentioned that physical inactivity is the leading cause of disease and disability and this is a warning for the whole human population. It was stated that sedentary lifestyle was among the ten causes for death and disability in the whole world where it can cause mortality, double the risk for cardiovascular disease, increase the risks for cancer and osteoporosis and caused depression in 60 to 85% of people around the world (WHO, 2002). Therefore, this shows that physical inactivity needed to be prevented for better future.

In the United States, the second most preventable cause of death is inactivity and non-healthy diet (National Cancer Institute, 2009). On the other hand, a few studies have shown that everyone should have a healthy lifestyle specifically a healthy diet, regular exercise and to maintained a normal weight to live a long and healthy life (Lipowski & Zaleski, 2015; Stevens, 2011). There are no age limits to exercise and 30 minutes of exercise per day is sufficient as suggested by Centers for Disease Control and Prevention (CDC), however for vigorous exercise, the individuals need to refer to their doctor as it may carry

risks (National Cancer Institute, 2009; National Obesity Observatory, 2011). Therefore, one of the important factors in changing the habit of an unhealthy lifestyle to a healthy lifestyle is the motivation.

Motivation is defined as the act, or providing with a reason to act in a certain way (Dictionary.com (n.d)). It is also defined as a force that initiate or to maintain behavior changes toward something or someone and sometime a cause of action taken (Center for Substance Abuse Treatment, 2012). There are a few researchers attempted to explain the model of motivation by generating some theories, for example is the self-determination theory (Lonsdale, Sabiston, Taylor, & Ntoumanis, 2011), and social cognitive theory (Schunk & Usher, 2012).

Motivation is closely related to self-esteem of an individual or group. In psychology, self-esteem is one of the popular words. It is a feeling where at the end they themselves appreciate, like, or approve their own selves as the result of being worthy (Blascovich & Tomaka, 1991). Self-esteem within psychology is frequently cited as a favorable or unfavorable attitude toward themselves (Rosenberg, 1965). By increasing in self-esteem, a person will have the confidence to change, such as participating in a physical activity (PA), or learn a new sport. Self-esteem has a relative construct with self-efficacy that is why it is also contributes to health-oriented issues and is always referred as sense of competence and ability (Mecca, Smelser, & Vasconcellos, 1989).

Self-esteem and motive to participate in PA is related to the duration of PA. It is possible that self-esteem and motivation to do PA affect duration of PA individually or as

combination. There are also situations where sometime PA can contribute to changes of self-esteem. It is important to determine the factors affecting on of duration of PA because this information can be used to help in promoting the benefit of physical activity. This will ensure that the problem rise from physical inactivity can be overcome as this has become one of the crucial things discussed in our community recently.

In this study, Confirmatory Factor Analysis (CFA) was used to confirm the construct of measures in the State Self-esteem Scale (SSES), and Physical Activity and Leisure Motivation Scale for Youth (PALMS-Y) for the adolescent population of Kelantan State. PALMS-Y is a modified version of the Physical Activity and Leisure Motivation Scale (PALMS) (Zach, Bar-Eli, Morris, & Moore, 2012) developed specifically to measure motives for PA of the adolescents. The PALMS-Y consists of 28 items reflecting seven subscales) which are easily understood by adolescent (Zhu, Zhang, & Chen, 2015). The SSES consists of 20 items reflecting three subscale measuring the current thought self-esteem by three criteria that is performance, social, and appearance (Heatherton & Polivy, 1991).

This study is important as it will help us to further understand how the motivation impacts the adolescent positively or negatively toward their PA which may influence their overall health. People with higher motivation tend to live a healthy lifestyle than people who did not have the motivation toward participation in exercise and PA. The present study evaluate the adolescent students in Kota Bharu, Kelantan, in terms of their motivation toward PA and their self-esteem and how this relationship can further influence their duration in PA. The information from this study can be useful in finding a solution to help in improving

their motivation to do PA and thus promote and improve healthy lifestyles among adolescent.

1.2 Statement of the problem

Sedentary behavior are any activity characterized by an energy expenditure of equal or less than 1.5 metabolic equivalents such as in a sitting or reclined posture (Lou, 2014). Engaging in sedentary lifestyle is one of the major risk factors of various health diseases such as diabetes and stroke (Armstrong, Bauman, & Davies, 2000). The population at risk was among the adolescent. A few researches reported that adolescences have low physical activity and this has become concerns as stated by Hashim, Golok, & Ali (2011) and Weiss (2000). According to WHO (2015) adolescent are defined as people with their age ranged from 10 to 19 years old. Aarnio, Winter, Peltonen, Kujala, and Kaprio (2002) suggested that young people are often considered to be the healthiest population, however the study have showed that this generation's health is at risk because of inconsistency to engage in PA. American Heart Association suggested that a sedentary lifestyle is one of the five major risk factors for cardiovascular disease along with other risk factors such as smoking, obesity, high blood pressure blood lipids with abnormal value. On the other hand, regular exercise can help to positively alter the cardiovascular risk factors and contribute to various psychological benefits. Therefore, being physically active should be encouraged among the people especially the youth. This is because youth who enjoy exercise and any PA tend to stay active throughout their lives (Litt, Iannotti, & Wang, 2011).

The motives of participating in any PA among adolescences have not yet been well documented among the researchers. Although there are some studies demonstrated the

association between motivation and PA participation e.g., (Butt, Weinberg, Breckon, & Claytor, 2011; Litt et al., 2011), the results were limited and generalize in the western population. There is still lack of study looking at the motive of participate in PA among adolescents in a Malay culture population. Furthermore, there is a need to investigate the motive of participate in PA among our adolescent which can be the core contributor in increasing the duration in exercise or any leisure activities. Therefore, investigating what is the motivation that stimulates people to exercise is important.

However there is a lack of information on the motivation to do PA and self-esteem level among the adolescents in Kelantan. Duration of PA among the adolescent were not reported elsewhere when the present study is conducted. Therefore, it is important for us to know the duration of PA among the adolescents, what are the motivation components that motivate them to regularly do PA and the current self-esteem levels among the adolescents. Adolescents are important asset for our country. Therefore, their PA duration, motivation to exercise, and self-esteem are needed to be examined closely. Thus, appropriate intervention program can be implemented in future to improve their exercise or PA behaviour and indirectly enhance the physical health among the adolescents.

1.3 Rationale and significance of study

Physical activity (PA) is an important daily routine that is needed to make our whole life balance as it keeps us healthy, if being used in the right way. Therefore, self-esteem and motives to participate in PA and exercise are important to be observed. Furthermore, our samples were adolescences specifically secondary students where this was the transition period from children to adulthood. So, it is important to focus on them so that we can know

their level of self-esteem and motives to PA. Therefore, they can choose to make changes for their own benefit as both are important to maintain a healthy lifestyle. Kelantan was chosen because it was one of the states that the citizens have highest risk to develop different kind of lifestyle-related illness problem such as diabetes, obesity, stroke, and hypertension. This study would create a valid and reliable scale to measure self-esteem and motivation to exercise among adolescents in Kota Bharu, Kelantan and for other population that shared the similar demographic structure.

The aim of the study was to evaluate the validity and reliability of Malay version of PALM-Y-M and also SSES-M, and examine the current level of students' motivation in PA among adolescent in secondary school in Kelantan. By conducting this study, we hope that it may also create awareness and motivate the students to participate in various PA. This study would be beneficial not only to an individual, but also indirectly help the community by reducing lifestyle-related illnesses and possibly improve their study performance.

WHO once been suggested that physically active young people are more readily to adopt other healthy behaviors (e.g. avoidance of tobacco, alcohol and drug use) and demonstrate higher academic performance at school (WHO, 2015). Thus, motivation to be active and modification of lifestyles could be one of the crucial way to alter this situation from getting worsen. This is also parallel to the campaign organized by the Malaysian government such as “Good body for good mind” and “One sport, One student”, the initiative made to nurture healthy lifestyle among students. Therefore from this study, more information can be gained and relate to the campaign itself. In addition, it also can help to add to the current literature about motivation to exercise among secondary school’s students in Kelantan

context and to provide the findings to the Malaysian Ministry of Health, and Malaysian Ministry of Education about the problem faced by the adolescents that can create harm in the future. It also contributes in providing information about the health status of the adolescence so that the school principal can take action and try to solve this problem before it become uncontrollable and can further lead to a better surrounding for the next population's generation.

1.4 Scope of the study

The scope of the study is to identify the two components that are motivation and self-esteem, that can create an impact on the duration of PA. As both increase, it may contribute to a higher level of fitness. Studies had shown that higher self-esteem could help to increase the motivation. Thus, when the youth stay motivated, they will tend to enjoy participating in PA and make it fun and enjoyable lifestyle. Then, people with higher levels of motivation would participate in sport and exercise more. For example, adolescents who started enjoying sports tend to stay active throughout their life, but they need some encouragement to stay motivated to participate in PA. In addition, performing more vigorous activities will help them increase their fitness level which can further prevent heart disease, diabetes, and other medical problems later in life.

Motivation was reported to have positive relationship with the fitness level in a study by Riiser et al (2014). The study examined the association between cardio-respiratory fitness and health-related quality of life (HRQoL) and the role of motivation (Riiser et al., 2014). The study found that motivation and fitness are related.

This study was aimed to identify the best fit measurement model of PALM-Y and SSES in the cultural context of Malaysia. Then, the best fit measurement model of PALMS-Y and SSES were used in a structural equation modeling to examine the interrelationships between the study variables which were self-esteems, motives of participating in PA and duration of PA among adolescent's secondary school student populations.

1.5 Research Question, Research Objectives, and Hypothesis

1.5.1 Problem statement

State Self-esteem (SSES) was popular in the psychology field used to measure individual's self-esteem while PALMS-Y is a revised version PALMS that is originally made for adult and had been revised to suit specifically adolescent to measure the motives of participation in physical activity. Both were well-known questionnaires in measuring their respective related trait based on their motives of development. In addition, both have been proven globally as valid and reliable measurements. However, due to difference of cultural and demographic factors with the intended setting, Kelantan state the reliability and validity of the questionnaire need to be established before it can be used.

1.5.2 Research question

1. Are the Malay version of SSES-M and PALMS-Y-M a valid and reliable questionnaire for assessing the motives of participating in PA and the state self-esteem respectively among adolescent students?
2. Is there any significant path relationship between self-esteems, motives of participating in PA and duration of PA among adolescent students?

1.5.3 Research objectives

a) General objective

To translate and validate the Malay version of SSES-M and PALMS-Y-M questionnaires and to determine the structural relationships between self-esteem, motives of participating in PA, and the duration of PA among secondary school students in Kota Bharu, Kelantan.

b) Specific objectives

1. To translate SSES and PALMS-Y to Malay.
2. To assess the validity and reliability of the translated Malay version of SSES-M and PALMS-Y-M among secondary school students in Kota Bharu, Kelantan using confirmatory factor analysis.
3. To describe the level of state self-esteem, motives of PA among secondary school students in Kota Bharu, Kelantan.
4. To examine the structural relationship between self-esteem, motives of participating in PA, and the duration of PA among secondary school students in Kota Bharu, Kelantan.

1.5.4 Hypothesis

1. The Malay version of PALMS-Y and SSES are valid and reliable questionnaires for assessing the motives of PA and self-esteem levels respectively among secondary school students in Kota Bharu, Kelantan.

2. There are significant inter-relationships between self-esteem, motives of participating in PA and the duration of PA among secondary school students in Kota Bharu, Kelantan.

CHAPTER 2:

LITERATURE REVIEW

2.1 Introduction

This chapter includes review of the literature relevant to the objectives of the present study. The literature search was done throughout the study to support the findings and was used as a reference for new found information.

2.2 Search terms and databases

The search engines used includes Science Direct, Google Scholar, Proquest, Cochrane and other databases sources with the main keywords: motivation, physical activity, duration, exercise, self-esteem, adolescent with Boolean logic “OR” and “AND”. Specifically, other synonyms words were also used to gather information related to the study. The key search term basically individually or as combination such as adolescent, secondary school’s students, youth, young adults, exercise or sport, physical activity, motivation to exercise, self-esteem, fitness, cardiovascular endurance, REMM, PALMS, self-efficacy, SSES, duration of exercise, modeling self-esteem, motivation to exercise, and fitness level among adolescent in Kelantan, self-esteem and motivation, motivation and duration of exercise, self-esteem and duration of exercise. Then, the information to be used in the study is revised and chosen based on the suitability to the present study.

2.3 Physical Activities

There is a continual decrease in individual adherence to physical activity. Lou (2014) reported that children and adolescence spend average of 6-8 hours per day in sedentary

behavior and in 2009 kids spent an average of 89 minutes per day which is longer than 62 minutes in 2004. Furthermore, Lou (2014) also reported that an average of 62 minutes longer were spent in sedentary behavior in 2009, compared to in 2014. Besides, children have a 65% higher risk of being obese by watching television more than three hours per day compared to those who watched for less than one hour. This showed that the sedentary lifestyles among adolescents have become more serious throughout the time and it can bring harm if not being cared in a serious way.

The time designated for freely chosen activities, when he or she does not involved in self-care, work or school is defined as leisure activities. Globally, physical inactivity is estimated to cause two million deaths per year (World Health Organization, 2006). Motivation is one of the most important factors for the development of skill competencies, socializing with peers, exploring personal interest and enjoying life which is essentially for healthy living (Simpkins, Ripke, Huston, & Eccles, 2005). Thus, if the freely chosen activities were restricted, children was unable to explore their social, intellectual, emotional, communicative, and physical potential, and are less able to grow as individual (King et al., 2003). The quality of life for children and youth were contributed by the participation on leisure activities (Manus, Corcoran, & Perry, 2008). They are highly correlated by logic and research had showed that there are relationship on freely chosen activities and its motivation. On the other hand, everyday activities of childhood in all sport, entertainment, learning and religious expression also known as the definition of leisure activity (King et al., 2003; Majnemer et al., 2009). Findings from a few studies show that disability children are less able to engage with PA and thus exposed to lifestyle health related problem (Law et al., 2006; Manus et al., 2008). Therefore, the quality of life

for children and youth are affected by the participation on leisure activities (Manus et al., 2008).

In the world of evolving sciences and technologies, youth tend to prefer to engage with sitting activities such as surfing the internet, playing games in their tablets, or listening to the music from their MP3 Player. Most parents also encourage non-active lifestyle as long as their children can achieve good grades in their study and received awards in their academic. The inactive ways of life have contributed to the development of health-related problems like hypertension, obesity and many more. Rahim and Pawanteh (2000) had wrote an article related to how mass media affect the adolescents. They stated that “However, in societies where the new computer technology has not made a significant inroad, the everyday life of the adolescents could still be centered on the television. Adolescents should be fully informed more about health issues to appreciate consequences for many aspects of their health”. This environment can contribute to non-healthy lifestyle as well as brought along possible diseases to the individual.

It is important to fill the leisure time with beneficial activities to help maintaining a healthy lifestyles culture. For instance, WHO recommended 60 minutes per session of physical activity for youth regardless of skin colour, religion, gender or even income level (WHO, 2015). It has been a norm for the students to neglect physical education (PE) in schools because of the mindset that “it is not important”. Physical activity comes with many benefits were being ignored. “Children are barometers of the chaos that exists within their lives” as stated by Asa Don Brown, an author, speaker, and clinician. It showed that children have their own world and needs guides from elders for the right way of doing

thing similar to practice exercise as routine. It is important to select the right leisure activity for our children so that they can utilize their time effectively. Thus, the benefits of engaging to PA should be advertise to increase the awareness among adolescence and create a healthy and safer future for them.

Research has shown that everyone needs a healthy lifestyle specifically a healthy diet, regular exercise to maintain normal weight and to obtain long and healthy life. In United States, the second most preventable cause of death is inactivity and non-healthy diet (New York Times, 2016). “Program Sihat Untuk Remaja” (PROSTAR) has been implemented for school’s students by Malaysian governments to act as peer educators to guide the students on healthy lifestyle. The number of clubs is increasing but all of this will come with no avail if the message did not reach the heart of adolescents themselves (MoH, 2007). Therefore, one of the important factors contributing to a healthy lifestyle is the motivation to change the habit of healthy living and the individuals themselves need to take the first step for the changes.

“Adolescents aged 10-19 years old make up 19.2% of the total population in Malaysia. In 1997, 4.5% of the total deaths in the country pertained to young people aged 15–24 by various causes. Adolescent health issues are addressed by different ministries, government agencies, private sectors, and NGO’s in Malaysia. The major agencies are the Ministry of Health, Ministry of Education, Ministry of Youth and Sports, Ministry of Women, Family and Community Development, Malaysian Islamic Development Department, Federation of Family Planning Association Malaysia, Malaysian Medical Association, Malaysian Association for Adolescent Health, Malaysian Mental Health Association and Malaysian

AIDS Council (MoH, 2007). One of the issue being discussed is on protecting and promoting human health especially in adolescence population as future country's leader generation.

The reasons for sport participation and the program should be studied thoroughly. According to Deci (1975), physical factors are related to inner motivation. Therefore, encouraging and motivate people to undertake more physical activity is essential. The benefits of PA have been well documented in the literature (National Cancer Institute, 2009). It is stated that PA can help control weight, maintaining healthy body, reducing the risk of developing high blood pressure and diabetes, and also reduce risk of unhealthy issues such as heart disease, cancer, colon cancer, breast cancer, and premature death (National Cancer Institute, 2009). Moreover, physical inactivity is linked to many major causes of mortality and morbidity, diabetes, and depression (Armstrong et al., 2000). Therefore, physical activity is important and it should be practiced since adolescence.

Factors that stimulate and maintain individuals' participation in physical activity is defined as the energy and direction of behaviour (Deci, 1975; Deci, 1980; Deci & Ryan, 1985). People who are intrinsically motivated to engage in physical activity tend to participate longer period than people who are extrinsically motivated (Frederick & Ryan, 1993). Intrinsic motivation refers to an individual engaging in an activity for the pleasure and satisfaction (Frederick & Ryan, 1993). For example, a volleyball player who is driven to train for the fun and challenge involved in the sport is regarded to be intrinsically motivated. On the other hand, extrinsic motivation refers to an individual engaging in an activity for extrinsic reasons, such as external pressures or rewards.

2.4 State Self-Esteem Scale (SSES)

There are a few attempts to measure self-esteem using questionnaires produced among individuals. For instance, Rosenberg Self-Esteem(Rosenberg), known as the Rosenberg's self-esteem scale, Janis-Field Feelings of Inadequacy Scale(CHurch, Truss, & Velicer, 1980), Beck Depression Inventory, Self-Valuation ,Texas Social and Behavior Inventory Triads.

State Self-esteem scale (SSES) (Heatherton & Polivy, 1991) is one of the popular and well-proven scale to measure self-esteem which is a combination of Self-Esteem Inventory (Ghiselli, Campbell, & Zedeck,1981) with Rosenberg scale (Rosenberg,1965). “No perfect measure exists and that few of the conceptual and methodological criticisms had been answered” (Blascovich & Tomaka, 1991), and it is one of the better measure of self-esteem is recommended to be revised even though Rosenberg is the most widely used in research. “They next describe both measures as well as the State Self-esteem scale to measure self-esteem” (Heatherton & Polivy, 1991). SSES is a five-point likert scale with overall twenty items included on the questionnaire with three important subscales that measure the performance, appearance and social. It is reported to be acceptably high validity and reliability. In this study, the SSES will be translated to Malay and validated to see the relationship between it with motivation and duration of PA.

An exploratory factor analysis was done by Heatherton and Polivy (1991) to produce a questionnaire for measurement of short-lived (state) or so-called “current-thought self-esteem” by revising all of the popular questionnaires related to self-esteem on that time then they settle with two scales that is Janis-Field Feelings of Inadequacy Scale (JFS)

(Church et al., 1980) and Rosenberg Self-Esteem scale (RSE) (Rosenberg, 1965). They then decide to modify the 10 items global self-esteem measure because it is easy to administer the RSE but found that the experimental attempts failed where because of minimal variability in response have caused the scale to be quite insensitive to changes. They then continue by using multidimensional (measure various affective qualities of self-concept) trait scale known as JFS where it is reported as one of the better scales of self-esteem (Briggs & Cheek, 1986; Crandall, 1973). The 23-items JFS about self-regard, academic abilities and social confidence shows high reliability (spearman brown=0.91). Then a 20 items including 4 items for each five areas; academic, appearance, social, performance, and general self-esteem was selected to highlight the importance of momentarily feelings. In addition, a total of 428 undergraduate students in Erindale College of University of Toronto volunteered to enter the study where the age ranged is from 17 to 57 years ($M=20.3, SD=4.3$) with majority of them were female. The internal consistency (Cronbach's alpha) presented was 0.92 with three subscales with six to seven items per factor. Besides, the correlations study between SSES and other questionnaires measuring self-esteem also quite high value (Heatherton & Polivy, 1991). The SSES has been widely used by researchers in measuring the self-esteem among the participants (Harter, Waters, & Whitesell, 1998; Ikegami, 2001; Lyubomirsky & L, 1997). It is also translated into different languages such as Japanese (Ikegami, 2001).

2.5 Physical Activity Leisure Measure Scale for Youth (PALMS-Y-M)

There are also numbers of questionnaires that have been developed to measure participation motivation, such as Sport Motivation Scale (Fortier, Vallerand, Briere, & Provencher), Exercise Motivation Inventory (Markland & Hardy, 1993; Mullen et al.), Motivation for

Physical Activity Measure (Frederick & Ryan), the Sport Motivation Scale (Stevens; Wininger, 2006), the Exercise Motivation Scale(EMS) where both based on determination theory, the Motivation for Physical Activity measure using PALMS (Zach, Bar-Eli, Morris, & Moore, 2012a) and Recreational Exercise Motivation Measure (REMM) (Rogers & Morris, 2003). Measures for which there appears to be consensus among researchers, concerning reliability and validity, are the PALMS-Y-M scales for assessing motivation of physical activity. The PALMS-Y-M scale is based on theoretical framework, namely intrinsic-extrinsic motivation, as characterized in the Self-Determination Theory revised from REMM. It is also a comprehensive measure of participant motives for participation in sport and physical activity (Rogers & Morris, 2003). We try to validate PALMS-Y-M to suit the culture of adolescents in Malaysia.

PALMS-Y-M is a revised version of Recreational Exercise Motivational Measure (REMM) scale by Tony Morris which is a comprehensive measure of participant motives for participation in sport and physical activity, especially for adolescence will be used in this study. REMM scale consisted of 73 items is revised to make it more suitable with the environmental aspect of adolescent in secondary school (Rogers & Morris, 2003). From 40 items and 8 subscales of PALMS scales, 28 items were selected and subscales reduced to 7 to form PALMS-Y-M (Kueh et al., 2015). Some items need to be reduced or dropped because of unmatched with the population interest and finally it reduced into 28 items only, known as PALMS-Y-M (Hu et al., 2015). REMM and PALMS have been validated, so then it is plausible to accept that PALMS-Y-M also a reliable measure as it came from the same source. So, to reconfirm the validity and reliability of the questionnaire it is then tested among specific adolescence population. The respondents need to rate the motives of

participation in physical activities by 5 point Likert scales which ranged from strongly not agree (1) to strongly agree (5) where indicates higher rating shows higher motivation (Hu et al., 2015). PALMS-Y-M was chosen to be used in this study to measure the motives of participating in sports and physical activity. The objective of using this scale is because it is simple, direct, and easily assesses the motivation for physical activity leisure among the adolescents in Kelantan state.

Molanorouzi (2015) reported a validation study of PALMS where it was done with a sample of 502 volunteers participated in regular PA in the last six months before the study and were recruited from fitness and recreational parks and facilities. The results of the study reported that this questionnaire is proven to measures comprehensively motives of participating in physical activities where PALMS which consist of 8 factors namely as mastery, enjoyment, psychological condition, physical condition, appearance, other's expectations, affiliation and competition or ego have good overall reliability that is 0.82 (Molanourozi, 2015). Besides, the subscales internal consistency measured as reported by Cronbach's alpha were also good which ranged from 0.78 to 0.82 and the criterion validity by Spearman's rho also indicated a significant strong correlation between PALMS and the actual questionnaire (first version) REMM ($r_s=0.86$, $p<0.001$). Then, the subscales criterion validity between this two questionnaire also high, which showed by their spearman rho's that ranged from $r_s=0.79$ to 0.95 and the result of test retest correlation of subscales were also high with the lowest is competition/ego subscales (0.78). Lastly, the confirmatory Factor Analysis also reported model is fit ($\chi^2/df=2.820$, NFI=0.899, CFI=0.909, RMSEA=0.060, 90%CI; 0.057, 0.063). PALMS had been used by researchers in measuring the motives of participate in exercise or physical activity among the participants

(Molanorouzi, 2015; Tony Morris, Hu, Molanorouzi, Khoo, & RoyChowdhury, 2015 ; Zach et al., 2012). PALMS had been translated in Mandarin (Hu et al., 2015) and Malay (Kueh, Morris, & Ern, 2015).

2.6 Interrelationship between self-esteem and motivation and duration of exercise

Merriam-Webster's Collegiate Dictionary defines motivation as "that which gives purpose and direction to behaviour" (Merriam-Webster's Collegiate Dictionary, 2015). The elements of motivation are discipline, preparation, flexibility, commitment and having fun. Therefore, purpose and direction are important factors that motivate an individual to conduct physical activity or exercise.

Research on gender differences in participation motivation indicates that males and females exhibit different motives for participation in physical activity (Frederick & Ryan, 1993; Morris, Clayton, & Han, 1995; Weinberg et al., 2000; World Health Organization, 2006). Males favored competition as a motive for participation in physical activity, female favored social experience (Mathes & Battista, 1985). In addition, males placed more emphasis on motives related to mastery, females seemed to be more interested in motives related to physical attractiveness and appearance (Frederick & Ryan, 1993). A number of other studies have shown that females consistently rated appearance motives more highly than their male counterparts (frederick & Morrison, 1996; Frederick, Morrison, & Manning, 1996; Frederick & Ryan, 1993; Weinberg et al., 2000). T Morris et al. (1995) conducted discriminant function analyses for age and gender on type of motivation. Affiliation and health were rated higher by females than males. Challenge and status were found to be more important for males than females.

Many researchers reported relationship between self-esteem and participation in physical activity (Gruber, 1986) and the association to academic performance (Stremblay, Inman, & Willms, 2000; Yawkey, 1980). Environmental pressure can also have strong link with self-esteem as many children wish to perform well in physical activity among their peer groups (Cantell, Smythe, & Ahonen, 1994; Shoemaker & Kalvaboer, 1994). A research by Whitehead and Corbin showed that physical activity can affect individual's self-esteem but no clear evidence on how it affect academic success (Schneiders, Zusman, & Singer, 1998). By using the 16 items Self-Description Questionnaire showed a significant relationship between vigorous physical activity and self-esteem for all 12 years old males and female (Stremblay et al., 2000). Another research also highlighted the importance of regular physical activities towards various psychological characteristics like the management of mood and self -esteem of individual especially among mental health patients ((Ellis, Randall, & Punnett, 2013).

Health-related fitness is one component to evaluate physical fitness (Carspersen, Powell, & Christenson, 1985). To understand youth's fitness, it usually involves evaluation of the health-related component of a person (Safrit, 1990). Some research suggested that the habit of being active in physical activity during adult life is highly dependent on the childhood's fitness (Malina, 2001). For example, youth who are inactive score lesser when compared to more active youth during cardiovascular test (Huotari, Nupponen, Laakso, & Kujala, 2010). Thus, from the research we will able to conclude later that motivation and self-esteem as the additional factor can affect effectively on the development of youth's fitness.

“Frequency of PA is defined as the number of times the respondent self-reported participating in physical activity, within a reporting period” (Armstrong et al., 2000). American Heart Association suggested that the total weekly amount of energy are count or recognizes than duration of a single exercise session for greatest heart protection. There were also reported that stated that 45% of risk developing heart disease can be lowered if someone maintains an active lifestyle compare to non-active person. And sedentary lifestyle people have 35% greater risk of developing high blood pressure where the effect of regular exercise that can help keep arteries flexible even in older people not suited for them (National Obesity Observatory, 2011).

Molanorouzi (2015) has also suggested that there are significant relationships between motives of physical activities motives and the amount of PA performed and regression analysis also proved the positive predictive effect of PALMS motive for amount of PA. Chowdhury (2012) gave evidence on differences of socio-demographic variable and also motives of participation in physical activities between gender. Chiu and Kayat (2010) have their research proves that as results of the study showed that high motivation toward PA and self-efficacy can initiate higher rate of participation in physical activities, so, we can conclude that motivation and self-efficacy factors were the best predictors of physical activity participation during leisure time especially among undergraduate students. The model from SEM research of Jaakkola and Washington (2011) demonstrated a correlation value between perceived physical fitness and PA.

2.7 Validation

There are a few definitions of validation given by health-related agency like validation is the process of establishing the suitability of a mechanism or system to performing a particular task or the act or process of making something like tools to be valid and it requires planning measurement parameters and evaluation of fitness for purpose, followed by executing the plan and documenting the results (Dictionary,2012). For the current study, validation is the process of validating an instrument to measure the required thing because there are non-available measure yet or any changes done to the measure where the standard procedure need to be followed.

2.7.1 Measurement validity

Validity is defined as “to determine if we can draw accurate conclusions about the presence and degree of attribute for an individual or as a tool measure what it supposed to measure” (Streiner, Norman, & Cairney, 2015). The validity need to be tested for some areas when some is not needed because of two main reasons that is to know the nature of what is being measured and to know the relationship between the observations and what it reflects or the outcomes (Streiner, Norman, & Cairney, 2015).

2.7.1.1 Content validity

Content validity is use to examining the content of the items of the test, to make sure that they adequately sampled the participants being evaluated (Streiner et al., 2015). “Thus the higher the content validity the measure is, the broader are the inferences that we can validly draw about the person under a variety conditions and in different situations” (Streiner et al., 2015).

2.7.1.2 Construct Validity

“Construct validity is the framework of hypothesis testing based on the knowledge of the underlying construct.” (Streiner et al., 2015). Streiner et al. (2015) also state that construct validity is needed when content and criterion validity is insufficient to assess the usefulness of the scales that were more widely used in clinical psychology to evaluate areas like attitudes, feelings and beliefs or even pathological states like depression (Streiner, Norman, & Cairney, 2015). Construct validity is assessed by examining convergent and discriminant validity. Convergent validity is the items that are indicators of a specific construct should converge or share a high proportion of variance in common (Hair, William, Barry, & Rolph, 2010). On the other hand, discriminant validity means the construct is distinct from other constructs where an evidence that the construct is unique and can capture some phenomenon that other measures do not if it has high discriminant validity.

2.7.1.3 Face Validity

As the respondents from specific population will be completing the questionnaire, it is better for the questionnaire to be revised and judged by representatives from the populations. Face validity is used as a pretest for readability and absence of ambiguity before it can be used in a larger population (Streiner et al., 2015).

2.7.2 Measurement reliability

Reliability is defined as the “extent to which repeated measurements of a stable phenomenon or by different people and instruments, at different times and places but can get